



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – Pennsylvania	
Inspection Report for: LH0034-C1 Line Heater	Date Last Inspected: 09/11/2018
Remaining Life: 24.4 YRS	Next UT: 09/11/2021 Next VT: 09/11/2021
Representative Corrosion Rate: .1 MPY	Mfg Serial #: 1455-03
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 616771
Year Built: 2012	Canadian Registration #: V7026.2

FMC Technologies Completion LH0034-C1 (Coil 1)



PRESSURE VESSEL INVENTORY

☒ Code ☐ Code-invalidated ☐ Non-Code ☐ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0034
Eq/Circ. ID : LH0034-C1
Equipment Name/Service : Line Heater-Coil 1
Physical Location : In Evanston Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Line Heater

Vessel Size:

Operating Pressure Range (psig): N/A

Operating Temperature Range (°F): N/A

Does the vessel have Internal Access? Yes

Specify type of internal access, if available: When bundles are pulled out.

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: ☐ Yes ☐ No

Any stamping pertaining to materials of construction?: ☐ Yes ☐ No

****Diameter****(strap equipment):

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process)

Approximate Date built or installed (check associated equipment or info at facility)

Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☒ No stamp

MANUFACTURED & CERTIFIED BY		
CORAL OILFIELD SERVICES INC.		
780-402-9800 WWW.CORALOILFIELD.COM		
GRANDE PRAIRIE AB. CANADA		
MANUF SER NO.	1455-03	
YEAR BUILT	2012 CRN V7026.21	
	COIL #1	COIL #2
MAWP (kPa)	68948	
TEMP (C)	93	
NPS (IN)	4	
THICKNESS (MM)	25.4	
MATERIAL (SA)	519	
XRAY	100	
CORR ALL (MM)	3.175	
CODE	B31.3	
TEST PRESS (kPa)	103422	
DRWG. NO.	3764-01	PWHT 1200
MDMT	-20 C	-4 F
INSP. NO.	616771	

09

SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp
Repaired By _____ Date of Repair _____
No Other Stamping Information

VESSEL DOCUMENTATION (Manufacturer Data Sheets)

- ☒ ASME U-1 or U-1A Forms (Canadian Equivalent)
☐ U2 or U4 Supplemental Forms
☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Name:

Sterling Mack

Date: 09/28/2012

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0034	Eq/Circ. ID: LH0034-C1
Equipment Name/Service: Line Heater-Coil 1	
Physical Location: In FMC Yard	
Manufacturer: Coral Oilfield Services Inc.	Manufacturer Serial Number: 1455-03
Year Built: 2012	CRN: V7026.2
Alberta Registration Number: 616771	National Board Number: N/A

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is intact and legible. The nameplate bracket is securely attached.

Internal Access? 4 man hatches.

Corrosion Monitoring Locations (CMLs) and baseline thickness data established? Yes

Grounding Device in Place and Secure? N/A, the equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All 64 anchor bolt nuts are in place and secure. Front plate is all secure.

Condition of Steel Supports, Saddles and bolting: All support structural welds appear sound. Front plate is secure. There is minor chipping and surface corrosion on the supports.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling. There is moderate surface corrosion on the Coils.

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzle and flanges are in good condition. All flange bolting is in place and secure.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: Access ladders and stairways are in acceptable condition.

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? No

If Yes, is it set at or below the MAWP?

Date PSV last tested (if there is a tag on the valve)

Comments:

Fired tubes on this until were hammer tested and no areas of concern were found. Coils have moderate corrosion. Moderate to heavy scaling prevented getting some readings.

Recommendations:

None

Repairs Needed:

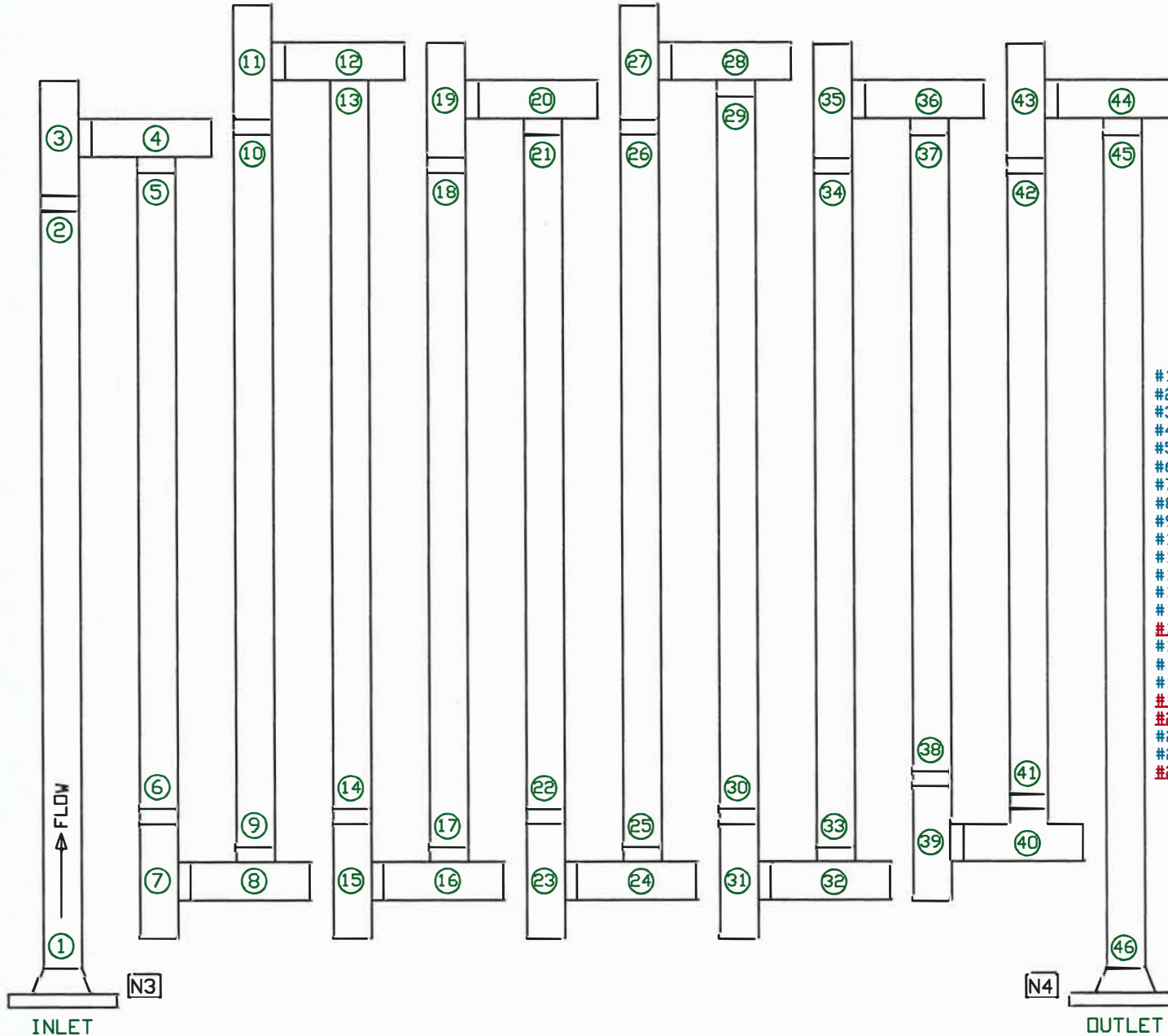
None

Mike York/MJW
API 510 Inspector Signature

66475
API 510 Inspector Number

09/11/2018
Date

EQUIP RETIREMENT DATE:
12/20/2042 NEXT INSPECTION IS DUE:
9/11/2021



4 READINGS TAKEN AROUND
THE CIRCUMFERENCE
RECORDED THE LOWEST.

NAMEPLATE INFO	
MFG	CORAL OILFIELD SERVICES INC.
SERIAL NUMBER	1455-04
ALBERTA REG. #	616772
DATE BUILT	2012
DESIGN P & T	10,000 psi @ 200°F

○ INLET

OUTLET ○

DA-501

#1. 01- STR-L 1.003 DA
#2. 01- STR-R 1.027 DA
#3. 01- EL-T 1.311 DA
#4. 01- EL-BK 1.319 DA
#5. 01- STR-BK 0.996 DA
#6. 01- STR-R 0.985 DA
#7. 01- EL-T 1.276 DA
#8. 01- EL-T 1.268 DA
#9. 01- STR-L 0.963 DA
#10. 01- STR-R 1.016 DA
#11. 01- EL-T 1.287 DA
#12. 01- EL-T 1.270 DA
#13. 01- STR-L 1.021 DA
#14. 01- STR-L 0.986 DA
~~#15. 01- EL-R 1.251 DA~~
#16. 01- EL-R 1.263 DA
#17. 01- STR-L 1.007 DA
#18. 01- STR-L 1.019 DA
~~#19. 01- EL 0.000 NT~~
~~#20. 01- EL 0.000 NT~~
#21. 01- STR-T 1.025 DA
#22. 01- STR-L 0.983 DA
~~#23. 01- EL-T 1.256 DA~~
#24. 01- EL-F 1.264 DA
#25. 01- STR-R 0.984 DA
#26. 01- STR-T 0.977 DA
#27. 01- EL-T 1.272 DA
~~#28. 01- EL-BK 1.224 DA~~
#29. 01- STR-R 1.031 DA
#30. 01- STR-L 0.995 DA
#31. 01- EL-T 1.281 DA
#32. 01- EL-L 1.259 DA
#33. 01- STR-BT 0.987 DA
#34. 01- STR-R 1.001 DA
~~#35. 01- EL 0.000 NT~~
~~#36. 01- EL 0.000 NT~~
#37. 01- STR 0.000 NT
#38. 01- STR-L 0.999 DA
#39. 01- EL-T 1.231 DA
#40. 01- ELT 1.227 DA
#41. 01- STR-L 1.003 DA
#42. 01- STR-L 1.023 DA
#43. 01- EL-T 1.277 DA
#44. 01- EL-T 1.280 DA
#45. 01- STR-L 1.019 DA
#46. 01- STR-T 0.973 DA

CAL BLK=60°F

PIPE=73°F

BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0034-C2
EQUIP NAME	LINE HEATER
DWG #	LH0034-C2

DESC: COIL 2 ON LINE HEATER
DWG#: LH0034-C2-1.01-46.01

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
 1595 So Hwy 150, Suite F, Evanston, WY 82930
 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/16/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C2
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 12/20/2042

Group Description:
 RCR = 0.1 MPY
 Rem. Life (from last survey 09/11/2018) = 24.3 yrs

0 C.A. Status: No
 Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
1.01	STR-L	N	1.005	09/28/2012	0.984 TC	11/12/2017	1.003 DA	09/11/2018	0	0.3	3.2	38.4	0.750 U	0.3	01/16/2862	09/11/2021
2.01	STR-R	N	1.015	09/28/2012	0.985 TC	11/12/2017	1.027 DA	09/11/2018	0	0	1.4	19.7	0.750 U	0.1	09/26/4018	09/11/2021
3.01	EL-T	N	1.296	09/28/2012	1.252 TC	11/12/2017	1.311 DA	09/11/2018	0	0	3.3	84.1	0.750 U	0.1	09/26/4018	09/11/2021
4.01	EL-BK	N	1.299	09/28/2012	1.293 TC	11/12/2017	1.319 DA	09/11/2018	0	0	0	49.7	0.750 U	0.1	09/26/4018	09/11/2021
5.01	STR-BK	N	1.006	09/28/2012	0.960 TC	11/12/2017	0.996 DA	09/11/2018	0	1.7	5.0	34.4	0.750 U	1.7	05/28/2163	09/11/2021
6.01	STR-R	N	0.982	09/28/2012	0.954 TC	11/12/2017	0.985 DA	09/11/2018	0	0	2.9	62.5	0.750 U	0.1	09/26/4018	09/11/2021
7.01	EL-T	N	1.333	09/28/2012	1.250 TC	11/12/2017	1.276 DA	09/11/2018	0	9.6	11.9	51.6	0.750 U	9.6	06/27/2073	09/11/2021
8.01	EL-T	N	1.318	09/28/2012	1.265 TC	11/12/2017	1.268 DA	09/11/2018	0	8.4	10.0	36.4	0.750 U	8.4	05/12/2080	09/11/2021
9.01	STR-L	N	0.978	09/28/2012	0.945 TC	11/12/2017	0.963 DA	09/11/2018	0	2.5	7.3	67.5	0.750 U	2.5	11/24/2103	09/11/2021
10.01	STR-R	N	1.017	09/28/2012	0.986 TC	11/12/2017	1.016 DA	09/11/2018	0	0.2	2.5	40.2	0.750 U	0.2	09/21/3348	09/11/2021
11.01	EL-T	N	1.328	09/28/2012	1.254 TC	11/12/2017	1.287 DA	09/11/2018	0	6.9	8.7	58.3	0.750 U	6.9	07/09/2096	09/11/2021
12.01	EL-T	N	1.305	09/28/2012	1.243 TC	11/12/2017	1.270 DA	09/11/2018	0	5.9	9.2	94.2	0.750 U	5.9	11/01/2106	09/11/2021
13.01	STR-L	N	1.010	09/28/2012	0.970 TC	11/12/2017	1.021 DA	09/11/2018	0	0	1.8	51.6	0.750 U	0.1	09/26/4018	09/11/2021
14.01	STR-L	N	0.982	09/28/2012	0.952 TC	11/12/2017	0.986 DA	09/11/2018	0	0	5.3	66.3	0.750 U	0.1	09/26/4018	09/11/2021
15.01	EL-R	Y *	1.339	09/28/2012	1.276 TC	11/12/2017	1.251 DA	09/11/2018	30.1	14.8	14.0	43.3	0.750 U	30.1	05/04/2035	09/11/2021
16.01	EL-R	N *	1.323	09/28/2012	1.225 TC	11/12/2017	1.263 DA	09/11/2018	0	10.1	15.4	65.4	0.750 U	10.1	06/27/2069	09/11/2021
17.01	STR-L	N	1.020	09/28/2012	0.936 TC	11/12/2017	1.007 DA	09/11/2018	0	2.2	7.4	34.4	0.750 U	2.2	07/08/2135	09/11/2021
18.01	STR-L	N	0.975	09/28/2012	0.963 TC	11/12/2017	1.019 DA	09/11/2018	0	0	0	76.7	0.750 U	0.1	09/26/4018	09/11/2021
19.01	EL	Y *	1.326	09/28/2012	1.291 TC	10/26/2016	1.212 TC	11/12/2017	75.5	22.3	18.3	82.7	0.750 U	75.5	12/26/2023	11/12/2021
20.01	EL	Y *	1.332	09/28/2012	1.362 TC	10/26/2016	1.265 TC	11/12/2017	92.7	13.1	6.6	92.7	0.750 U	92.7	06/03/2023	11/12/2021

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
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 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/16/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C2
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name: Group Description:
 Insp. Due Date = 09/11/2021 RCR = 0.1 MPY
 Pred. Ret. Date = 12/20/2042 Rem. Life (from last survey 09/11/2018) = 24.3 yrs

0 C.A. Status: No
 Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
21.01	STR-T	N	1.004	09/28/2012	0.973 TC	11/12/2017	1.025 DA	09/11/2018	0	0	0.3	28.7	0.750 U	0.1	09/26/4018	09/11/2021
22.01	STR-L	N	0.984	09/28/2012	0.948 TC	11/12/2017	0.983 DA	09/11/2018	0	0.2	6.3	66.0	0.750 U	0.2	09/20/3183	09/11/2021
23.01	EL-T	Y *	1.286	09/28/2012	1.270 TC	11/12/2017	1.256 DA	09/11/2018	16.9	5.0	7.0	44.0	0.750 U	16.9	08/20/2048	09/11/2021
24.01	EL-F	N	1.285	09/28/2012	1.235 TC	11/12/2017	1.264 DA	09/11/2018	0	3.5	6.9	72.1	0.750 U	3.5	07/22/2165	09/11/2021
25.01	STR-R	N	0.989	09/28/2012	0.954 TC	11/12/2017	0.984 DA	09/11/2018	0	0.8	6.5	38.4	0.750 U	0.8	03/16/2311	09/11/2021
26.01	STR-T	N	0.953	09/28/2012	0.956 TC	11/12/2017	0.977 DA	09/11/2018	0	0	0.7	144.3	0.750 U	0.1	09/26/4018	09/11/2021
27.01	EL-T	N	1.322	09/28/2012	1.248 TC	11/12/2017	1.272 DA	09/11/2018	0	8.4	11.7	50.7	0.750 U	8.4	11/02/2080	09/11/2021
28.01	EL-BK	Y *	1.344	09/28/2012	1.250 TC	11/12/2017	1.224 DA	09/11/2018	31.3	20.2	16.7	47.8	0.750 U	31.3	11/02/2033	09/11/2021
29.01	STR-R	N	0.998	09/28/2012	0.976 TC	11/12/2017	1.031 DA	09/11/2018	0	0	0.3	45.2	0.750 U	0.1	09/26/4018	09/11/2021
30.01	STR-L	N	0.977	09/28/2012	0.971 TC	11/12/2017	0.995 DA	09/11/2018	0	0	1.4	70.6	0.750 U	0.1	09/26/4018	09/11/2021
31.01	EL-T	N	1.305	09/28/2012	1.264 TC	11/12/2017	1.281 DA	09/11/2018	0	4.0	5.6	39.2	0.750 U	4.0	06/13/2151	09/11/2021
32.01	EL-L	N *	1.324	09/28/2012	1.247 TC	11/12/2017	1.259 DA	09/11/2018	0	10.9	10.2	94.7	0.750 U	10.9	05/23/2065	09/11/2021
33.01	STR-BT	N	1.001	09/28/2012	0.971 TC	11/12/2017	0.987 DA	09/11/2018	0	2.4	5.6	28.6	0.750 U	2.4	06/12/2117	09/11/2021
34.01	STR-R	N	0.980	09/28/2012	0.966 TC	11/12/2017	1.001 DA	09/11/2018	0	0	1.1	106.7	0.750 U	0.1	09/26/4018	09/11/2021
35.01	EL	Y *	1.337	09/28/2012	1.384 TC	10/26/2016	1.286 TC	11/12/2017	93.7	10.0	4.2	93.7	0.750 U	93.7	08/02/2023	11/12/2021
36.01	EL	Y *	1.321	09/28/2012	1.357 TC	10/26/2016	1.205 TC	11/12/2017					0.750 U			11/12/2021
37.01	STR	N *	0.999	09/28/2012	0.973 TC	10/26/2016	0.973 TC	11/12/2017	0	5.1	5.9	26.6	0.750 U	5.1	08/04/2061	11/12/2021
38.01	STR-L	N	0.951	09/28/2012	0.960 TC	11/12/2017	0.999 DA	09/11/2018	0	0	0	150.4	0.750 U	0.1	09/26/4018	09/11/2021
39.01	EL-T	N *	1.315	09/28/2012	1.227 TC	11/12/2017	1.231 DA	09/11/2018	0	14.1	19.4	75.8	0.750 U	14.1	10/22/2052	09/11/2021
40.01	ELT	N *	1.302	09/28/2012	1.219 TC	11/12/2017	1.227 DA	09/11/2018	0	12.6	18.2	76.8	0.750 U	12.6	07/20/2056	09/11/2021
41.01	STR-L	N	0.984	09/28/2012	0.934 TC	11/12/2017	1.003 DA	09/11/2018	0	0	4.7	55.1	0.750 U	0.1	09/26/4018	09/11/2021

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
 1595 So Hwy 150, Suite F, Evanston, WY 82930
 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/16/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C2
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 12/20/2042

Group Description:
 RCR = 0.1 MPY
 Rem. Life (from last survey 09/11/2018) = 24.3 yrs

0 C.A. Status: No
 Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
42.01	STR-L	N	0.969	09/28/2012	0.947 TC	11/12/2017	1.023 DA	09/11/2018	0	0	0	95.1	0.750 U	0.1	09/26/4018	09/11/2021
43.01	EL-T	N	1.315	09/28/2012	1.226 TC	11/12/2017	1.277 DA	09/11/2018	0	6.4	12.4	55.5	0.750 U	6.4	01/15/2101	09/11/2021
44.01	EL-T	N	1.306	09/28/2012	1.235 TC	11/12/2017	1.280 DA	09/11/2018	0	4.4	11.1	63.1	0.750 U	4.4	02/25/2139	09/11/2021
45.01	STR-L	N	1.010	09/28/2012	0.972 TC	11/12/2017	1.019 DA	09/11/2018	0	0	2.2	16.7	0.750 U	0.1	09/26/4018	09/11/2021
46.01	STR-T	N	0.991	09/28/2012	0.960 TC	11/12/2017	0.973 DA	09/11/2018	0	3.0	6.2	39.4	0.750 U	3.0	01/10/2093	09/11/2021

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Phone 307-789-3540 FAX 307-789-2822

Report Date: 10/16/2018

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Unit: LH-0034
Eq/Circ ID: LH0034-C2
Design Code: B31.3
Eq Type: VESSEL
Class:
CM RBI:

Description: LH-0034 COIL 2; SN:1455-04

TML Corrosion Rates are each the Maximum of:

(A) -- Calculated Corrosion Rates x 1.00	:	Varies
(B) -- Default Corrosion Rate	:	0.1 MPY

Representative Corrosion Rate is the Maximum of:

(A) -- Average Corrosion Rate x 1.10	:	Not Used.
(B) -- Average Max 25.0% of TMLs, Min of 2	:	Not Used.
(C) -- Formula Corrosion Rate (Sigma = 1.28)	:	Not Used.
(D) -- Default Corrosion Rate	:	0.1 MPY

Representative Corrosion Rate = 0.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have not been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short
Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 3 months.

TML Inspection Interval is:
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 24.3 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 25% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 12/20/2042

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2021
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 7 Caution TMLs in this Eq/Circ ID.



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – Pennsylvania	
Inspection Report for: LH0034-C2 Line Heater	Date Last Inspected: 09/11/2018
Remaining Life: 20+ YRS	Next UT: 09/11/2021 Next VT: 09/11/2021
Representative Corrosion Rate: .1 MPY	Mfg Serial #: 1455-04
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 616772
Year Built: 2012	Canadian Registration #: V7026.2

FMC Technologies Completion LH0034-C2-Coil 2



PRESSURE VESSEL INVENTORY

☒ Code ☐ Code-invalidated ☐ Non-Code ☐ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0034
Eq/Circ. ID : LH0034-C2
Equipment Name/Service : Line Heater
Physical Location : In Evanston Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Line Heater

Vessel Size:

Operating Pressure Range (psig): N/A

Operating Temperature Range (°F): N/A

Does the vessel have Internal Access? Yes

Specify type of internal access, if available: When bundles are pulled out.

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: ☐ Yes ☐ No

Any stamping pertaining to materials of construction?: ☐ Yes ☐ No

****Diameter****(strap equipment):

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process)

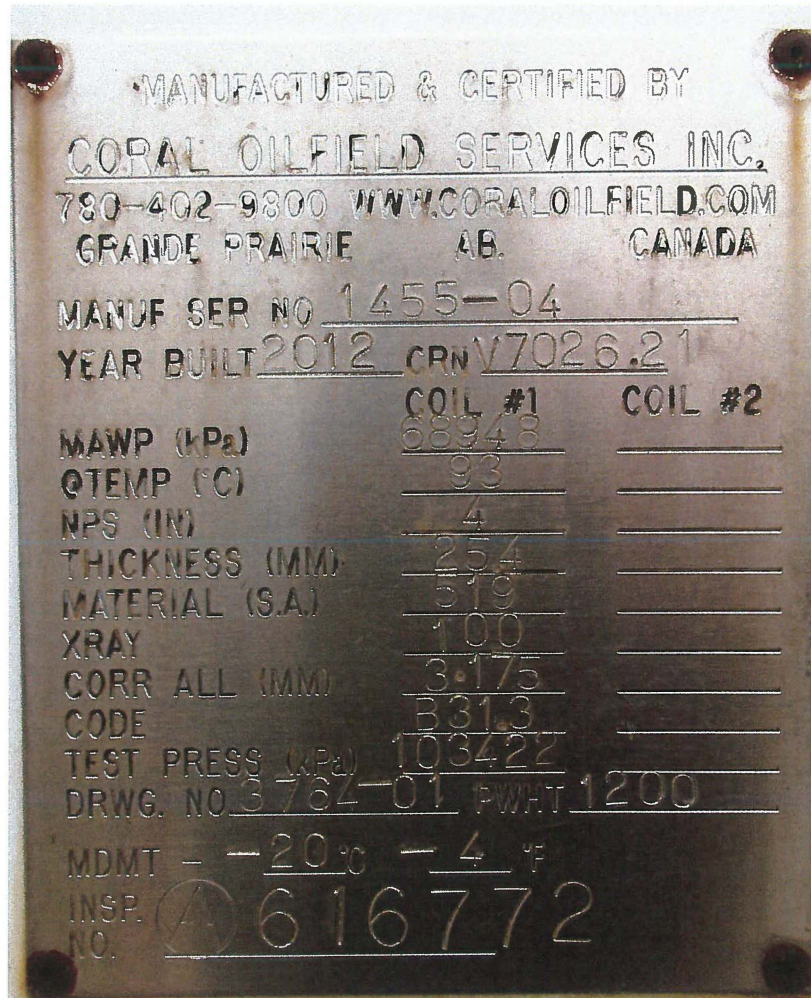
Approximate Date built or installed (check associated equipment or info at facility)

Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☒ No stamp



SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp

Repaired By

Date of Repair

No Other Stamping Information

VESSEL DOCUMENTATION

Manufacturer Data Sheets: ☒ ASME U-1 or U-1A Forms ☐ U2 or U4 Supplemental Forms
☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Name: Sterling Mack

Date: 09/28/2012

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0034	Eq/Circ. ID: LH0034-C2
Equipment Name/Service: Line Heater-Coil 2	
Physical Location: In FMC Yard	
Manufacturer: Coral Oilfield Services Inc.	Manufacturer Serial Number: 1455-04
Year Built: 2012	CRN: V7026.21
Alberta Registration Number: 616772	National Board Number: N/A

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is intact and legible. The nameplate bracket is securely attached.

Internal Access? 4 man hatches.

Corrosion Monitoring Locations (CMLs) and baseline thickness data established? Yes

Grounding Device in Place and Secure? N/A, the equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All 64 anchor bolt nuts are in place and secure.

Condition of Steel Supports, Saddles and Bolting: All support structural welds appear sound. Front plate is secure. There is minor chipping and surface corrosion on the supports.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling. Coils have moderate corrosion with scaling.

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzle and flanges are in good condition. All flange bolting is in place and secure.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: Access ladders and stairways are in acceptable condition.

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? No

If Yes, is it set at or below the MAWP?

Date PSV last tested (if there is a tag on the valve)

Comments:

Coils have moderate corrosion. Moderate to heavy scaling prevented getting some readings. There is moderate pitting present throughout the coil piping.

Recommendations:

Ensure a PSV is installed prior to putting this unit in to service.

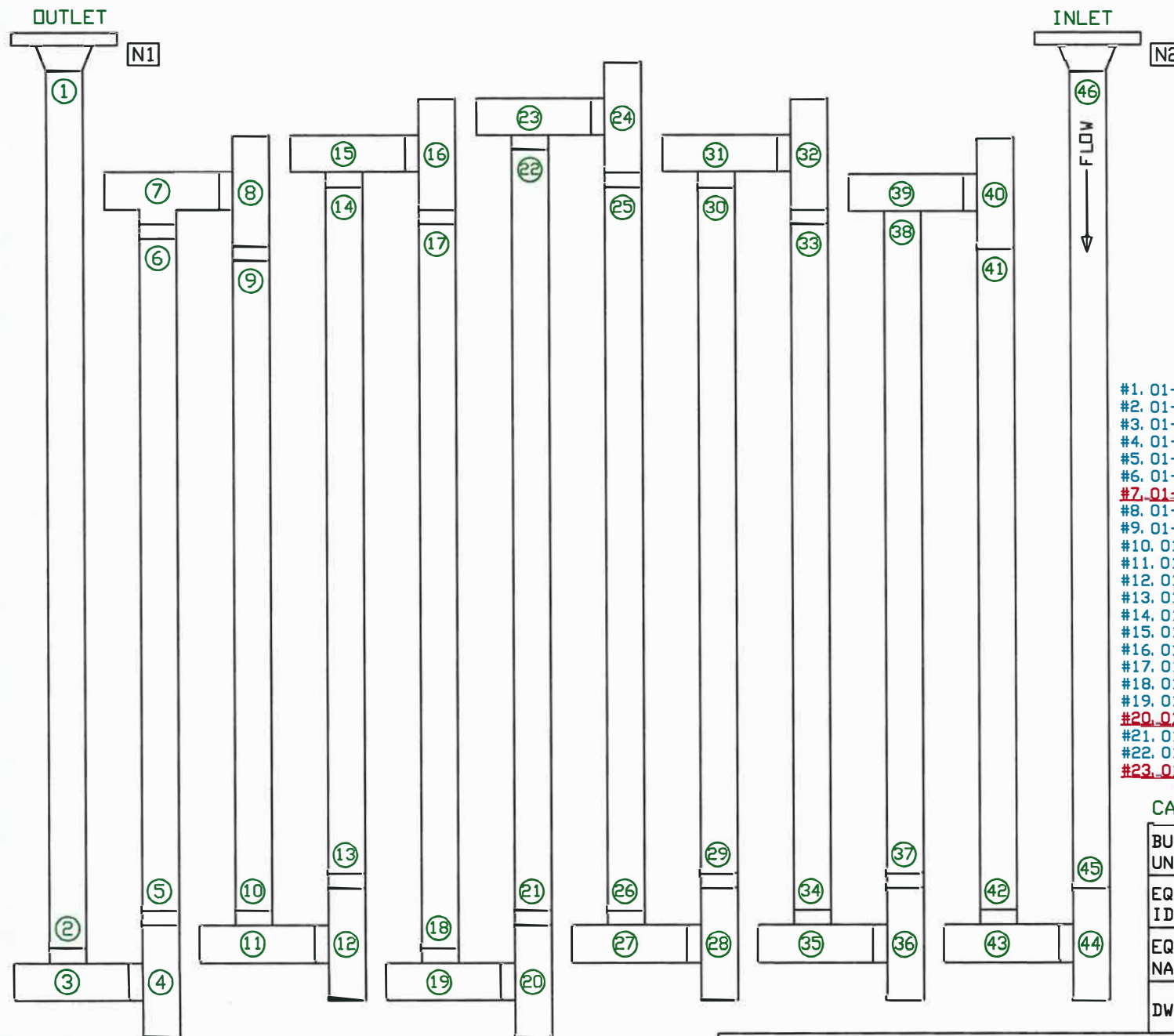
Repairs Needed:

Mike York/MJW
API 510 Inspector Signature

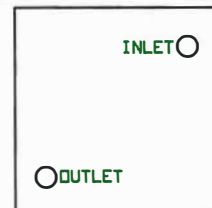
66475
API 510 Inspector Number

09/11/2018
Date

EQUIP RETIREMENT DATE: 2/7/2043
NEXT INSPECTION IS DUE: 9/11/2021



NAMEPLATE INFO	
MFG	CORAL OILFIELD SERVICES INC.
SERIAL NUMBER	1455-03
ALBERTA REG. #	616771
DATE BUILT	2012
DESIGN P & T	10,000 psi @ 200°F



DA-501

#1.01- STR-T 1.011 DA #24.01- EL-F 1.287 DA
#2.01- STR-R 1.013 DA #25.01- STR-BK 0.987 DA
#3.01- EL-T 1.277 DA #26.01- STR-T 0.998 DA
#4.01- EL-T 1.287 DA #27.01- EL-R 1.284 DA
#5.01- STR-R 0.987 DA #28.01- EL-BK 1.274 DA
#6.01- STR-L 1.003 DA #29.01- STR-R 0.979 DA
~~#7.01- EL-T 1.256 DA~~ #30.01- STR-L 1.008 DA
#8.01- EL-F 1.281 DA #31.01- EL-L 1.307 DA
#9.01- STR-T 0.987 DA #32.01- EL-R 1.295 DA
#10.01- STR-T 0.993 DA #33.01- STR-L 1.000 DA
#11.01- EL-L 1.299 DA #34.01- STR-T 1.009 DA
#12.01- EL-T 1.296 DA #35.01- EL-L 1.287 DA
#13.01- STR-L 0.985 DA #36.01- EL-BK 1.281 DA
#14.01- STR-T 1.038 DA ~~#37.01- STR-B 0.000 NT~~
#15.01- EL-B 1.276 DA #38.01- STR-L 1.037 DA
#16.01- EL-F 1.271 DA ~~#39.01- EL-T 1.266 DA~~
#17.01- STR-R 0.989 DA #40.01- EL-T 1.295 DA
#18.01- STR-T 1.013 DA #41.01- STR-T 0.973 DA
#19.01- EL-T 1.286 DA #42.01- STR-T 1.010 DA
~~#20.01- EL-T 1.256 DA~~ ~~#43.01- EL-L 1.081 DA~~
#21.01- STR-R 1.031 DA ~~#44.01- EL 0.000 NT~~
#22.01- STR-L 1.010 DA #45.01- STR-T 1.026 DA
~~#23.01- EL-T 1.233 DA~~ #46.01- STR-L 0.983 DA

CAL BLK=65°F

PIPE=73°F

BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0034-C1
EQUIP NAME	LINE HEATER
DWG #	LH0034-C1

4 READINGS TAKEN AROUND
THE CIRCUMFERENCE
RECORDED THE LOWEST.

DESC: COIL 1 ON LINE HEATER
DWG#: LH0034-C1-1.01-46.01

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
 1595 So Hwy 150, Suite F, Evanston, WY 82930
 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/30/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C1
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 02/07/2043

Group Description:
 RCR = 0.1 MPY
 Rem. Lite (from last survey 09/11/2018) = 24.4 yrs

0 C.A. Status: No
 Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date	
1.01	STR-T	N	0.975	09/28/2012	0.962 TC	11/12/2017	1.011 DA	09/11/2018	0	0	0.2	76.7	0.750	U	0.1	09/26/4018	09/11/2021
2.01	STR-R	N	1.012	09/28/2012	0.981 TC	11/12/2017	1.013 DA	09/11/2018	0	0	3.1	29.5	0.750	U	0.1	09/26/4018	09/11/2021
3.01	EL-T	N	1.335	09/28/2012	1.147 TC	11/12/2017	1.277 DA	09/11/2018	0	9.7	18.3	105.2	0.750	U	9.7	01/09/2073	09/11/2021
4.01	EL-T	N	1.334	09/28/2012	1.294 TC	11/12/2017	1.287 DA	09/11/2018	8.4	7.9	5.1	29.5	0.750	U	8.4	08/16/2082	09/11/2021
5.01	STR-R	N	1.010	09/28/2012	0.976 TC	11/12/2017	0.987 DA	09/11/2018	0	3.9	5.7	32.5	0.750	U	3.9	06/19/2079	09/11/2021
6.01	STR-L	N	0.998	09/28/2012	0.969 TC	11/12/2017	1.003 DA	09/11/2018	0	0	2.3	62.5	0.750	U	0.1	09/26/4018	09/11/2021
7.01	EL-T	Y *	1.327	09/28/2012	1.276 TC	11/12/2017	1.256 DA	09/11/2018	24.1	11.9	12.8	46.3	0.750	U	24.1	09/10/2039	09/11/2021
8.01	EL-F	N	1.318	09/28/2012	1.262 TC	11/12/2017	1.281 DA	09/11/2018	0	6.2	9.1	45.3	0.750	U	6.2	05/05/2104	09/11/2021
9.01	STR-T	N *	1.018	09/28/2012	0.981 TC	11/12/2017	0.987 DA	09/11/2018	0	5.2	3.3	57.7	0.750	U	5.2	04/09/2064	09/11/2021
10.01	STR-T	N	0.975	09/28/2012	0.954 TC	11/12/2017	0.993 DA	09/11/2018	0	0	2.4	76.7	0.750	U	0.1	09/26/4018	09/11/2021
11.01	EL-L	N	1.314	09/28/2012	1.258 TC	11/12/2017	1.299 DA	09/11/2018	0	2.5	8.2	55.1	0.750	U	2.5	04/20/2238	09/11/2021
12.01	EL-T	N	1.319	09/28/2012	1.271 TC	11/12/2017	1.296 DA	09/11/2018	0	3.9	3.7	94.2	0.750	U	3.9	09/12/2158	09/11/2021
13.01	STR-L	N *	1.020	09/28/2012	0.967 TC	11/12/2017	0.985 DA	09/11/2018	0	5.9	8.7	58.1	0.750	U	5.9	07/11/2058	09/11/2021
14.01	STR-T	N	0.989	09/28/2012	0.973 TC	11/12/2017	1.038 DA	09/11/2018	0	0	0	66.3	0.750	U	0.1	09/26/4018	09/11/2021
15.01	EL-B	N	1.326	09/28/2012	1.263 TC	11/12/2017	1.276 DA	09/11/2018	0	8.4	12.1	58.1	0.750	U	8.4	04/25/2081	09/11/2021
16.01	EL-F	N	1.336	09/28/2012	1.276 TC	11/12/2017	1.271 DA	09/11/2018	6.0	10.9	10.4	65.4	0.750	U	10.9	06/29/2066	09/11/2021
17.01	STR-R	N	1.010	09/28/2012	0.989 TC	11/12/2017	0.989 DA	09/11/2018	0	3.5	3.9	23.1	0.750	U	3.5	12/24/2086	09/11/2021
18.01	STR-T	N	1.017	09/28/2012	0.974 TC	11/12/2017	1.013 DA	09/11/2018	0	0.7	3.4	30.6	0.750	U	0.7	06/02/2394	09/11/2021
19.01	EL-T	N	1.319	09/28/2012	1.254 TC	11/12/2017	1.286 DA	09/11/2018	0	5.5	10.0	82.7	0.750	U	5.5	02/25/2116	09/11/2021
20.01	EL-T	Y *	1.334	09/28/2012	1.278 TC	11/12/2017	1.256 DA	09/11/2018	26.5	13.1	11.6	47.8	0.750	U	26.5	10/15/2037	09/11/2021

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
 1595 So Hwy 150, Suite F, Evanston, WY 82930
 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/30/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C1
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name:

Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 02/07/2043

Group Description:

RCR = 0.1 MPY
 Rem. Life (from last survey 09/11/2018) = 24.4 yrs

0 C.A. Status: No

Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
21.01	STR-R	N	1.008	09/28/2012	0.967 TC	11/12/2017	1.031 DA	09/11/2018	0	0	1.0	25.0	0.750 U	0.1	09/26/4018	09/11/2021
22.01	STR-L	N	0.979	09/28/2012	0.967 TC	11/12/2017	1.010 DA	09/11/2018	0	0	0	64.5	0.750 U	0.1	09/26/4018	09/11/2021
23.01	EL-T	Y *	1.338	09/28/2012	1.280 TC	11/12/2017	1.233 DA	09/11/2018	56.7	17.6	10.7	56.7	0.750 U	56.7	03/19/2027	09/11/2021
24.01	EL-F	N	1.319	09/28/2012	1.286 TC	11/12/2017	1.287 DA	09/11/2018	0	5.4	2.3	72.1	0.750 U	5.4	02/21/2118	09/11/2021
25.01	STR-BK	N	0.985	09/28/2012	0.951 TC	11/12/2017	0.987 DA	09/11/2018	0	0	4.0	46.0	0.750 U	0.1	09/26/4018	09/11/2021
26.01	STR-T	N	0.997	09/28/2012	0.977 TC	11/12/2017	0.998 DA	09/11/2018	0	0	1.9	24.6	0.750 U	0.1	09/26/4018	09/11/2021
27.01	EL-R	N	1.330	09/28/2012	1.265 TC	11/12/2017	1.284 DA	09/11/2018	0	7.7	8.2	68.8	0.750 U	7.7	01/17/2088	09/11/2021
28.01	EL-BK	N	1.299	09/28/2012	1.262 TC	11/12/2017	1.274 DA	09/11/2018	0	4.2	8.4	39.2	0.750 U	4.2	06/17/2143	09/11/2021
29.01	STR-R	N *	1.016	09/28/2012	0.973 TC	11/12/2017	0.979 DA	09/11/2018	0	6.2	6.7	45.2	0.750 U	6.2	08/19/2055	09/11/2021
30.01	STR-L	N	0.982	09/28/2012	0.954 TC	11/12/2017	1.008 DA	09/11/2018	0	0	2.8	60.1	0.750 U	0.1	09/26/4018	09/11/2021
31.01	EL-L	N	1.318	09/28/2012	1.280 TC	11/12/2017	1.307 DA	09/11/2018	0	1.8	2.6	21.0	0.750 U	1.8	02/24/2328	09/11/2021
32.01	EL-R	N	1.318	09/28/2012	1.276 TC	11/12/2017	1.295 DA	09/11/2018	0	3.9	6.6	22.6	0.750 U	3.9	06/10/2158	09/11/2021
33.01	STR-L	N	1.024	09/28/2012	0.975 TC	11/12/2017	1.000 DA	09/11/2018	0	4.0	4.0	51.6	0.750 U	4.0	03/12/2081	09/11/2021
34.01	STR-T	N	0.989	09/28/2012	0.937 TC	11/12/2017	1.009 DA	09/11/2018	0	0	4.2	106.7	0.750 U	0.1	09/26/4018	09/11/2021
35.01	EL-L	N	1.352	09/28/2012	1.281 TC	11/12/2017	1.287 DA	09/11/2018	0	10.9	11.3	52.9	0.750 U	10.9	12/17/2067	09/11/2021
36.01	EL-BK	N *	1.356	09/28/2012	1.278 TC	11/12/2017	1.281 DA	09/11/2018	0	12.6	11.2	57.4	0.750 U	12.6	11/02/2060	09/11/2021
37.01	STR-B	Y *	0.998	09/28/2012	1.027 TC	10/26/2016	0.947 TC	11/12/2017		10.0	4.9		0.750 U		06/10/2030	11/12/2021
38.01	STR-L	N	0.971	09/28/2012	0.931 TC	11/12/2017	1.037 DA	09/11/2018	0	0	0.4	89.0	0.750 U	0.1	09/26/4018	09/11/2021
39.01	EL-T	Y *	1.358	09/28/2012	1.275 TC	11/12/2017	1.266 DA	09/11/2018	10.8	15.5	13.7	36.3	0.750 U	15.5	12/26/2051	09/11/2021
40.01	EL-T	N	1.342	09/28/2012	1.267 TC	11/12/2017	1.295 DA	09/11/2018	0	7.9	7.2	63.1	0.750 U	7.9	09/07/2087	09/11/2021
41.01	STR-T	N *	1.014	09/28/2012	0.956 TC	11/12/2017	0.973 DA	09/11/2018	0	6.9	9.2	47.3	0.750 U	6.9	01/05/2051	09/11/2021

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
 1595 So Hwy 150, Suite F, Evanston, WY 82930
 Phone 307-789-3540 FAX 307-789-2822

Report Date: 10/30/2018

(Report in Inches, Corrosion Rates in MPY)
 Analysis: Straight Line

Unit: LH-0034
 Eq/Circ ID: LH0034-C1
 Eq Type: VESSEL
 Class:
 CM RBI:
 Design Code: B31.3

Flange Rating: 5625 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name:

Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 02/07/2043

Group Description:

RCR = 0.1 MPY
 Rem. Life (from last survey 09/11/2018) = 24.4 yrs

0 C.A. Status: No

Total Caution TMLs = 7

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
42.01	STR-T	N	1.003	09/28/2012	1.002 TC	10/26/2016	1.010 DA	09/11/2018	0	0	0	5.9	0.750 U	0.1	09/26/4018	09/11/2021
43.01	EL-L	Y *	1.338	09/28/2012	0.948 TC	11/12/2017	1.081 DA	09/11/2018	0	43.2	54.1	323.2	0.750 U	43.2	05/11/2026	09/11/2021
44.01	EL	Y *	1.350	09/28/2012	1.368 TC	10/26/2016	1.271 TC	11/12/2017		15.4	6.9		0.750 U	15.4	06/27/2026	11/12/2021
45.01	STR-T	N	0.975	09/28/2012	0.982 TC	11/12/2017	1.026 DA	09/11/2018	0	0	0	267.6	0.750 U	0.1	09/26/4018	09/11/2021
46.01	STR-L	N	1.007	09/28/2012	0.965 TC	11/12/2017	0.983 DA	09/11/2018	0	4.0	7.2	31.5	0.750 U	4.0	12/11/2076	09/11/2021

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 10/30/2018

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Unit: LH-0034
Eq/Circ ID: LH0034-C1
Design Code: B31.3
Eq Type: VESSEL
Class:
CM RBI:

Description: LH-0034 COIL 1; SN:1455-03

TML Corrosion Rates are each the Maximum of:

(A) -- Calculated Corrosion Rates x 1.00	Varies
(B) -- Default Corrosion Rate	0.1 MPY

Representative Corrosion Rate is the Maximum of:

(A) -- Average Corrosion Rate x 1.10	Not Used.
(B) -- Average Max 25.0% of TMLs, Min of 2	Not Used.
(C) -- Formula Corrosion Rate (Sigma = 1.28)	Not Used.
(D) -- Default Corrosion Rate	0.1 MPY

Representative Corrosion Rate = 0.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have not been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short
Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 3 months.

TML Inspection Interval is:
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 24.4 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 25% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 02/07/2043

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2021
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 7 Caution TMLs in this Eq/Circ ID.



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – PA District	
Inspection Report for: LH-0034 Fuel Gas Scrubber	Date Last Inspected: 09/11/2018
Remaining Life: 20+ YRS	Next UT: 09/11/2021 Next VT: 09/11/2021
Representative Corrosion Rate: 1.9 MPY	Mfg Serial #: Unknown
Manufacturer: No Access to Nameplate	Alberta Registration #: N/A
Year Built: Unknown	Canadian Registration #: N/A

FMC Technologies Completion LH-0034 Fuel Gas Scrubber



PRESSURE VESSEL INVENTORY

☐ Code ☐ Code-invalidated ☐ Non-Code ☒ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : FMC Technologies Completion
Facility/Location Name : Grand Junction
Field Name :
Equipment Number : LH0034-FGS
Eq/Circ. ID : LH0034-FGS
Equipment Name/Service : Fuel Gas Scrubber
Physical Location : FMC Grand Junction Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Vertical Fuel Gas Scrubber

Vessel Size: 8.625" OD

Operating Pressure Range (psig): Not in service during this inspection.

Operating Temperature Range (°F): Not in service during this inspection.

Does the vessel have Internal Access? No

Specify type of internal access, if available:

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: No

Any stamping pertaining to materials of construction?: No

****Diameter****(strap equipment): 8.625" OD

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process):

Approximate Date built or installed (check associated equipment or info at facility):

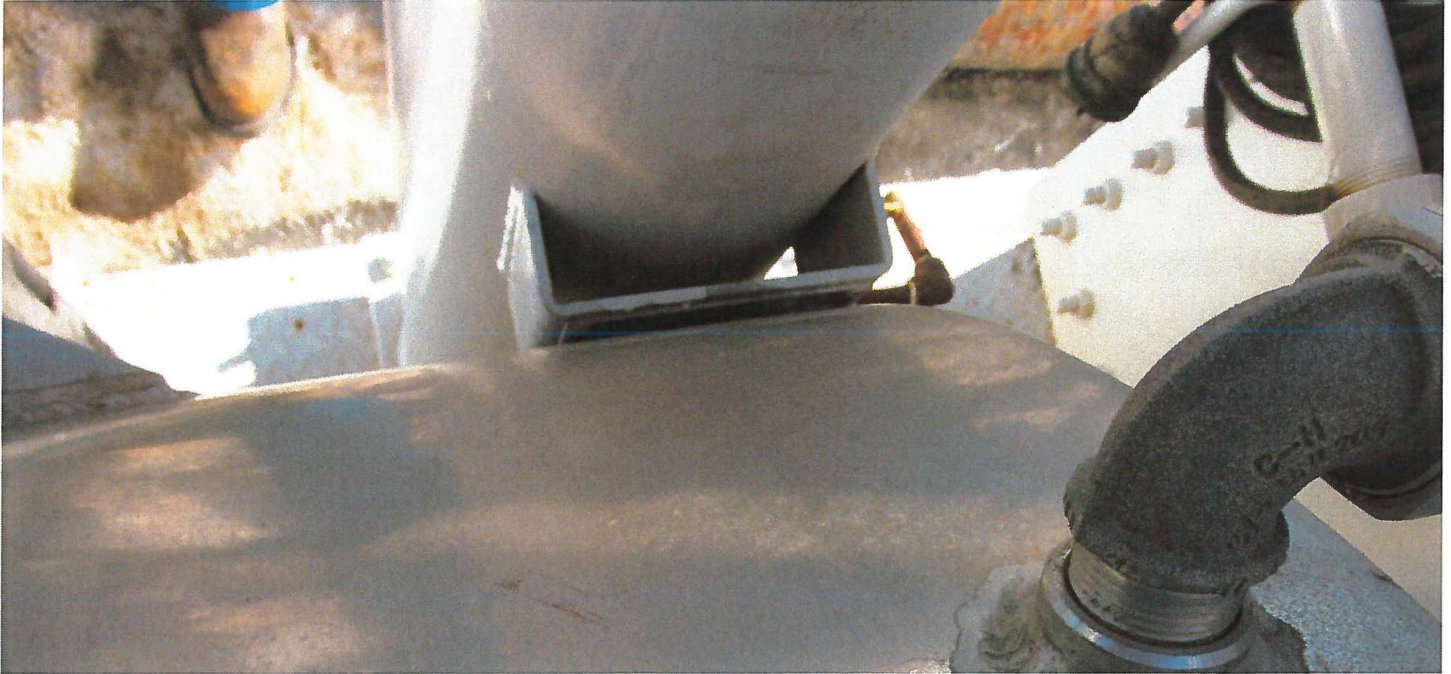
Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☐ No stamp

No Access To Nameplate



SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp

No supplemental nameplate or stamping located.

VESSEL DOCUMENTATION

- ☒ Manufacturer Data Sheets: (ASME U-1 or U-1A Forms)
- ☐ U2 or U4 Supplemental Forms
- ☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Dexter Bonner

Date: 01/21/2014

API 510 PRESSURE VESSEL EXTERNAL INSPECTION

Company Name: FMC Technologies Completion	
District: PA District	
Physical Location: In FMC Yard	
Equipment Name: LH-0034 Fuel Gas Scrubber	Eq Circ ID: LH0034-FGS
Manufacturer: No Access to Nameplate	Mfg Serial #: Unknown
Date Built: Unknown	National Board #: Unknown
Alberta Registration #: Unknown	Canadian Registration #: Unknown

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Vessel is mounted such that the nameplate is hard to see, got partial information only.

Internal Access: No

Corrosion Monitoring Locations (CMLs) and baseline thickness data established: Yes

Grounding Device in Place and Secure? The equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All (4) anchor bolt nuts are in place and secure. Vessel is welded to the baseplate which is in good condition.

Condition of Steel Supports, Saddles, and Bolting: All support structural welds appear sound. Vessel is welded to baseplate.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling.

Condition of Nozzles, Flanges, Repads, and Weepholes: All threaded connections. There is no evidence of leaks at any of the threaded connections.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: N/A

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? Yes

If yes, is it set at or below the MAWP? Set at 150 psi.

Date PSV last tested (if there is a tag on the valve): Tested on 01/2018 by Portersville.

Comments:

PSV is placed so that it fills with water. See attached photo.



Recommendations:

Repairs Needed:

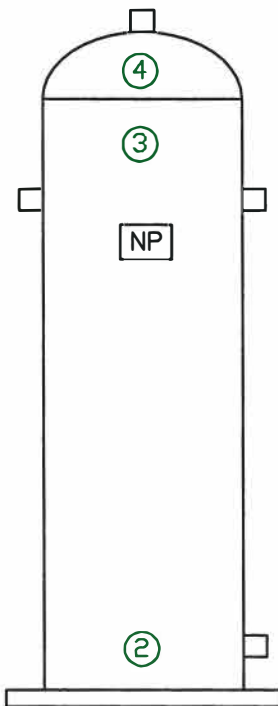
Mike York/MJW
API 510 Inspector Signature

0131
API 510 Inspector Number

09/11/2018
Date

EQUIP RETIREMENT DATE:
11/23/2122 NEXT INSPECTION IS DUE:
9/11/2021

- ```
#2. 01- BTM SHELL-F 0. 328 DA
#2. 02- BTM SHELL-L 0. 325 DA
#2. 03- BTM SHELL-BK 0. 320 DA
#2. 04- BTM SHELL-R 0. 324 DA
#3. 01- TOP SHELL-F 0. 328 DA
#3. 02- TOP SHELL-L 0. 327 DA
#3. 03- TOP SHELL-BK 0. 328 DA
#3. 04- TOP SHELL-R 0. 335 DA
#4. 01- TOP HEAD-F 0. 322 DA
#4. 02- TOP HEAD-L 0. 321 DA
#4. 03- TOP HEAD-BK 0. 322 DA
#4. 04- TOP HEAD-R 0. 325 DA
```

[illegible]

DA-501

| NAMEPLATE INFO   |                        |
|------------------|------------------------|
| MFG              | UNKNOWN                |
| SERIAL NUMBER    | NO ACCESS              |
| NATIONAL BOARD # | UNKNOWN                |
| DATE BUILT       | UNKNOWN                |
| DESIGN P & T     | NO ACCESS              |
| NOTE             | NO ACCESS TO NAMEPLATE |

CAL BLK=65°F

VESSEL=73° F

|               |                                |
|---------------|--------------------------------|
| BUSINESS UNIT | FMC TECHNOLOGIES<br>COMPLETION |
| EQ/CIRC ID #  | LH0034-FGS                     |
| EQUIP NAME    | FUEL GAS SCRUBBER              |
| LOCATION      | WITH LINE HEATER LH-0034       |
| DWG #         | LH0034-FGS                     |

DESC: FUEL GAS SCRUBBER WITH LH-0034  
DWG#: LH0034-FGS-2.01-4.04

## Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services  
 1595 So Hwy 150, Suite F, Evanston, WY 82930  
 Phone 307-789-3540 FAX 307-789-2822

Report Date:10/29/2018

(Report in Inches, Corrosion Rates in MPY)  
 Analysis: Straight Line

Unit: LH-0034  
 Eq/Circ ID: LH0034-FGS  
 Eq Type: VESSEL  
 Class:  
 CM RBI:  
 Design Code: S8/D1

Flange Rating: 3705 lb/in<sup>2</sup>  
 Design Pressure: 150 lb/in<sup>2</sup>  
 Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER WITH LH-0034  
 NO ACCESS TO NAMEPLATE

Summary: Group Name:  
 Insp. Due Date = 09/11/2021  
 Pred. Ret. Date = 11/23/2122

Group Description:  
 RCR = 1.9 MPY  
 Rem. Life (from last survey 09/11/2018) = 104.2 yrs

0 C.A. Status: NO  
 Total Caution TMLs = 0

| TML No | Location     | Ctn<br>TML | First<br>Survey<br>Thick Nt | First<br>Date | Previous<br>Survey<br>Thick Nt | Previous<br>Date | Last<br>Survey<br>Thick Nt | Last<br>Date | Shrt<br>Term<br>Rate | Long<br>Term<br>Rate | Best<br>Rate | Max<br>Hist<br>CR | Retirement<br>Thickness | Rep<br>TML<br>CR | TML<br>Retirement<br>Date | TML<br>Inspection<br>Date |
|--------|--------------|------------|-----------------------------|---------------|--------------------------------|------------------|----------------------------|--------------|----------------------|----------------------|--------------|-------------------|-------------------------|------------------|---------------------------|---------------------------|
| 2.01   | BTM SHELL-F  | N *        | 0.314 TC                    | 10/25/2016    | 0.310 TC                       | 11/10/2017       | 0.310 RR                   | 09/11/2018   | 0                    | 2.1                  | 2.2          | 3.8               | 0.188 S                 | 2.1              | 11/19/2076                | 09/11/2021                |
| 2.02   | BTM SHELL-L  | N          | 0.316 TC                    | 01/24/2014    | 0.313 TC                       | 11/10/2017       | 0.313 RR                   | 09/11/2018   | 0                    | 0.6                  | 0.7          | 3.8               | 0.188 S                 | 0.6              | 05/15/2227                | 09/11/2021                |
| 2.03   | BTM SHELL-BK | N *        | 0.310 TC                    | 01/24/2014    | 0.302 TC                       | 11/10/2017       | 0.302 RR                   | 09/11/2018   | 0                    | 1.7                  | 2.1          | 5.9               | 0.188 S                 | 1.7              | 11/14/2085                | 09/11/2021                |
| 2.04   | BTM SHELL-R  | N          | 0.317 TC                    | 01/24/2014    | 0.316 TC                       | 11/10/2017       | 0.316 RR                   | 09/11/2018   | 0                    | 0.2                  | 0.2          | 1.9               | 0.188 S                 | 0.2              | 09/16/2659                | 09/11/2021                |
| 3.01   | TOP SHELL-F  | N          | 0.315 TC                    | 10/25/2016    | 0.315 RR                       | 11/10/2017       | 0.318 RR                   | 09/11/2018   | 0                    | 0                    | 0            | 0                 | 0.188 S                 | 0.1              | 09/21/3320                | 09/11/2021                |
| 3.02   | TOP SHELL-L  | N *        | 0.320 TC                    | 01/24/2014    | 0.316 TC                       | 11/10/2017       | 0.316 RR                   | 09/11/2018   | 0                    | 0.9                  | 0.9          | 7.7               | 0.188 S                 | 0.9              | 02/21/2161                | 09/11/2021                |
| 3.03   | TOP SHELL-BK | N *        | 0.330 TC                    | 01/24/2014    | 0.321 TC                       | 11/10/2017       | 0.321 RR                   | 09/11/2018   | 0                    | 1.9                  | 2.3          | 4.9               | 0.188 S                 | 1.9              | 10/19/2088                | 09/11/2021                |
| 3.04   | TOP SHELL-R  | N          | 0.312 TC                    | 01/24/2014    | 0.318 RR                       | 11/10/2017       | 0.324 RR                   | 09/11/2018   | 0                    | 0                    | 0            | 0                 | 0.188 S                 | 0.1              | 09/21/3380                | 09/11/2021                |
| 4.01   | TOP HEAD-F   | N *        | 0.295 TC                    | 01/24/2014    | 0.292 TC                       | 11/10/2017       | 0.292 RR                   | 09/11/2018   | 0                    | 0.6                  | 0.8          | 1.9               | 0.169 S                 | 0.6              | 05/14/2224                | 09/11/2021                |
| 4.02   | TOP HEAD-L   | N          | 0.291 TC                    | 01/24/2014    | 0.291 RR                       | 11/10/2017       | 0.300 RR                   | 09/11/2018   | 0                    | 0                    | 0            | 0                 | 0.169 S                 | 0.1              | 09/20/3332                | 09/11/2021                |
| 4.03   | TOP HEAD-BK  | N *        | 0.298 TC                    | 01/24/2014    | 0.291 TC                       | 11/10/2017       | 0.291 RR                   | 09/11/2018   | 0                    | 1.5                  | 1.8          | 5.9               | 0.169 S                 | 1.5              | 04/18/2100                | 09/11/2021                |
| 4.04   | TOP HEAD-R   | N          | 0.290 TC                    | 01/24/2014    | 0.292 RR                       | 11/10/2017       | 0.299 RR                   | 09/11/2018   | 0                    | 0                    | 0            | 0                 | 0.169 S                 | 0.1              | 09/21/3322                | 09/11/2021                |

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services  
1595 So Hwy 150, Suite F, Evanston, WY 82930  
Phone 307-789-3540 FAX 307-789-2822

Report Date: 10/29/2018

(Report in Inches, Corrosion Rates in MPY)  
Analysis: Straight Line

Unit: LH-0034  
Eq/Circ ID: LH0034-FGS  
Design Code: S8/D1  
Eq Type: VESSEL  
Class:  
CM RBI:

Flange Rating: 3705 lb/in<sup>2</sup>  
Design Pressure: 150 lb/in<sup>2</sup>  
Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER WITH LH-0034  
NO ACCESS TO NAMEPLATE

TML Corrosion Rates are each the Maximum of:

|                                          |   |         |
|------------------------------------------|---|---------|
| (A) -- Calculated Corrosion Rates x 1.00 | : | Varies  |
| (B) -- Default Corrosion Rate            | : | 0.1 MPY |

Representative Corrosion Rate is the Maximum of:

|                                              |   |         |
|----------------------------------------------|---|---------|
| (A) -- Average Corrosion Rate x 1.00         | : | 0.8 MPY |
| (B) -- Average Max 25.0% of TMLs, Min of 2   | : | 1.9 MPY |
| (C) -- Formula Corrosion Rate (Sigma = 1.28) | : | 1.1 MPY |
| (D) -- Default Corrosion Rate                | : | 0.1 MPY |

Representative Corrosion Rate = 1.9 MPY

TML thickness readings have not been compensated for high Temperatures.  
TML thickness readings have been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short  
Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 6 months.

TML Inspection Interval is:  
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 104.2 years from the most recent survey date.  
(Estimated Life based on the ave of the earliest 0% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 11/23/2122

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2021  
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.  
There are 0 Caution TMLs in this Eq/Circ ID.



## MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL ☐

A# 616771

Manufactured By: Coral Oilfield Services Inc.

Manufactured For: Pure Energy Services Ltd

Ultimate Owner: Pure Energy Services Ltd

Location of Installation: 9608-69 Ave Clairmont AB

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 |              | Year Built |
|---------------------------|--------------------------|------------------|--------------|------------|
| 1455-03                   | 3764-01 rev1             | Edition          | 2010 Addenda | 2012       |

## CONSTRUCTION

| Coil ID/Purpose | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN     |
|-----------------|-----------------|-------------|---------------------|---------------------|------------------------|---------|
| a Coil          | 68948kPa        | 93 C        | -20 C               | 3.175mm             | 3764-01 rev1           | V7026.2 |
| b               |                 |             |                     |                     |                        |         |
| c               |                 |             |                     |                     |                        |         |
| d               |                 |             |                     |                     |                        |         |
| e               |                 |             |                     |                     |                        |         |

## COIL

| Tubes       |          |           | End Closures |             |           |             | Openings |             |           |
|-------------|----------|-----------|--------------|-------------|-----------|-------------|----------|-------------|-----------|
| Mat'l Spec. | Diameter | Thickness | Return Bend  | Mat'l Spec. | Thickness | Mat'l Spec. | Rating   | Mat'l Spec. | Size/Type |
| a SA519     | 4"       | 25.4mm    | SA519        | 25.4mm      | SA519     | 10000       |          |             |           |
| b           |          |           |              |             |           |             |          |             |           |
| c           |          |           |              |             |           |             |          |             |           |
| d           |          |           |              |             |           |             |          |             |           |
| e           |          |           |              |             |           |             |          |             |           |

## HEADERS/MANIFOLDS

| Purpose | Size | Shell       |           | Ends        |           | No | Openings    |           |        |
|---------|------|-------------|-----------|-------------|-----------|----|-------------|-----------|--------|
|         |      | Mat'l Spec. | Thickness | Mat'l Spec. | Thickness |    | Mat'l Spec. | Size/Type | Rating |
| f       |      |             |           |             |           |    |             |           |        |
| g       |      |             |           |             |           |    |             |           |        |

## TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

| Hydrostatic Test Pressure | Radiography (100% or % Random) | Other NDE (MT) (PT) (UT) | Postweld Heat Treatment |             | Overall Length | Heating Surface | Volume |
|---------------------------|--------------------------------|--------------------------|-------------------------|-------------|----------------|-----------------|--------|
|                           |                                |                          | Temp.                   | Time        |                |                 |        |
| a 103422 kPa              | 100%                           |                          | 849 C                   | 120 minutes | 7.3 meters     | 27.1m2          | 0.17m3 |
| b                         |                                |                          |                         |             |                |                 |        |
| c                         |                                |                          |                         |             |                |                 |        |
| d                         |                                |                          |                         |             |                |                 |        |
| e                         |                                |                          |                         |             |                |                 |        |
| f                         |                                |                          |                         |             |                |                 |        |
| g                         |                                |                          |                         |             |                |                 |        |

IMPACT TESTING: Impact tested per 323.2 at -4 F. The average shall be in accordance with table 323.3.5

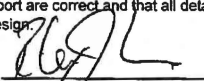
REMARKS:

## CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 18/2012

Signed

  
(Representative)

For Coral oilfield Services Ltd.

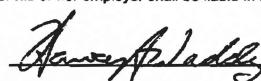
(Manufacturer)

## CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date April 18/2012

Signed

 NB12632A AB1834



the pressure equipment safety authority

## MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL ☐

A# 616772

Manufactured By: Coral Oilfield Services Ltd.

Manufactured For: Pure Energy Services Ltd

Ultimate Owner: Pure Energy Services Ltd

Location of Installation: 9608-69 Ave Clairmont AB

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 |              | Year Built |
|---------------------------|--------------------------|------------------|--------------|------------|
| 1455-04                   | 3764-01 rev1             | Edition          | 2010 Addenda | 2012       |

## CONSTRUCTION

| Coil ID/Purpose | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN     |
|-----------------|-----------------|-------------|---------------------|---------------------|------------------------|---------|
| a Coil          | 68948kPa        | 93 C        | -20 C               | 3.175mm             | 3764-01 rev1           | V7026.2 |
| b               |                 |             |                     |                     |                        |         |
| c               |                 |             |                     |                     |                        |         |
| d               |                 |             |                     |                     |                        |         |
| e               |                 |             |                     |                     |                        |         |

## COIL

| Tubes       |          |           | End Closures |             |           |         | Openings    |           |        |
|-------------|----------|-----------|--------------|-------------|-----------|---------|-------------|-----------|--------|
| Mat'l Spec. | Diameter | Thickness | Return Bend  | Mat'l Spec. | Thickness | Flanges | Mat'l Spec. | Size/Type | Rating |
| a SA519     | 4"       | 25.4mm    | SA519        | 25.4mm      | SA519     | 10000   |             |           |        |
| b           |          |           |              |             |           |         |             |           |        |
| c           |          |           |              |             |           |         |             |           |        |
| d           |          |           |              |             |           |         |             |           |        |
| e           |          |           |              |             |           |         |             |           |        |

## HEADERS/MANIFOLDS

| Purpose | Size | Shell       | Ends      |             |           |    | Openings    |           |        |
|---------|------|-------------|-----------|-------------|-----------|----|-------------|-----------|--------|
|         |      | Mat'l Spec. | Thickness | Mat'l Spec. | Thickness | No | Mat'l Spec. | Size/Type | Rating |
| f       |      |             |           |             |           |    |             |           |        |
| g       |      |             |           |             |           |    |             |           |        |

## TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

| Hydrostatic Test Pressure | Radiography (100% or % Random) | Other NDE (MT) (PT) (UT) | Postweld Heat Treatment |             | Overall Length | Heating Surface | Volume |
|---------------------------|--------------------------------|--------------------------|-------------------------|-------------|----------------|-----------------|--------|
|                           |                                |                          | Temp.                   | Time        |                |                 |        |
| a 103422 kPa              | 100%                           |                          | 649 C                   | 120 minutes | 7.3 meters     | 27.1m2          | 0.17m3 |
| b                         |                                |                          |                         |             |                |                 |        |
| c                         |                                |                          |                         |             |                |                 |        |
| d                         |                                |                          |                         |             |                |                 |        |
| e                         |                                |                          |                         |             |                |                 |        |
| f                         |                                |                          |                         |             |                |                 |        |
| g                         |                                |                          |                         |             |                |                 |        |

IMPACT TESTING: Impact tested per 323.2 at -4 F. The average shall be in accordance with table 323.3.5

REMARKS:

## CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 18/2012

Signed

(Representative)

For Coral oilfield Services Ltd.

(Manufacturer)

## CERTIFICATE OF SHOP INSPECTION

the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date April 18/2012

Signed

*Harvey Paladdy* NB 12632A AB183A.

STEAM COIL



# MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL ☐ A# 616773

Manufactured By: Coral Oilfield Services Ltd.

Manufactured For: Pure Energy Services Ltd

Ultimate Owner: Pure Energy Services Ltd

Location of Installation: 9608-69 Ave Claimont AB

| Manufacturer's Serial No. | Construction Drawing No. | CODE: ASME B31.3 |      | Year Built |
|---------------------------|--------------------------|------------------|------|------------|
| 1455-05                   | BDD-200 REV. 9           | Edition          | 2010 | Addenda    |
|                           |                          |                  |      | 2012       |

## CONSTRUCTION

| Coil ID/Purpose | Design Pressure | Design Temp | Design Minimum Temp | Corrosion Allowance | Registered Drawing No. | CRN       |
|-----------------|-----------------|-------------|---------------------|---------------------|------------------------|-----------|
| a Coil          | 8598 kpa        | 93 C        | 29 C                | 1.59mm              | BDD-200 REV 9          | P9408.213 |
| b               |                 |             |                     |                     |                        |           |
| c               |                 |             |                     |                     |                        |           |
| d               |                 |             |                     |                     |                        |           |
| e               |                 |             |                     |                     |                        |           |

## COIL

| Tubes       |          |           | End Closures |          |         |        | Openings    |           |        |
|-------------|----------|-----------|--------------|----------|---------|--------|-------------|-----------|--------|
| Mat'l Spec. | Diameter | Thickness | Return Bend  | Thicknss | Flanges | Rating | Mat'l Spec. | Size/Type | Rating |
| a SA234     | 2"       | 3.91mm    | SA234        | 3.91mm   |         |        |             |           |        |
| b           |          |           |              |          |         |        |             |           |        |
| c           |          |           |              |          |         |        |             |           |        |
| d           |          |           |              |          |         |        |             |           |        |
| e           |          |           |              |          |         |        |             |           |        |

## HEADERS/MANIFOLDS

| Purpose | Size | Shell       |           | Ends        |           | Openings |             |           |        |
|---------|------|-------------|-----------|-------------|-----------|----------|-------------|-----------|--------|
|         |      | Mat'l Spec. | Thickness | Mat'l Spec. | Thickness | No       | Mat'l Spec. | Size/Type | Rating |
| f       |      |             |           |             |           |          |             |           |        |
| g       |      |             |           |             |           |          |             |           |        |

## TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

| Hydrostatic Test Pressure | Radiography (100% or % Random) | Other NDE (MT) (PT) (UT) | Postweld Heat Treatment |      | Overall Length | Heating Surface     | Volume  |
|---------------------------|--------------------------------|--------------------------|-------------------------|------|----------------|---------------------|---------|
|                           |                                |                          | Temp.                   | Time |                |                     |         |
| a 12900kpa                | 100%                           |                          | no                      |      | 7.3 meters     | 4.62 meters squared | 0.05 m3 |
| b                         |                                |                          |                         |      |                |                     |         |
| c                         |                                |                          |                         |      |                |                     |         |
| d                         |                                |                          |                         |      |                |                     |         |
| e                         |                                |                          |                         |      |                |                     |         |
| f                         |                                |                          |                         |      |                |                     |         |
| g                         |                                |                          |                         |      |                |                     |         |

IMPACT TESTING:

REMARKS:

## CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 18/2012

Signed

*[Signature]*  
(Representative)

For Coral oilfield Services Ltd.

(Manufacturer)

## CERTIFICATE OF SHOP INSPECTION

., the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA— of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date April 18/2012

Signed

*[Signature]* WB12432A AB 183A.